ΤΣΙΜΕΝΤΟΠΟΙΙΑ ΒΑΣΙΛΙΚΟΥ ΔΗΜΟΣΙΑ ΕΤΑΙΡΕΙΑ ΛΤΔ
Εγκαταστάσεις Τσιμεντοποιίας - Περιοχή Βασιλικού
T: +357 24 845 555, Φ: +357 24 332 651
Εγγεγραμμένο Γραφείο και Ταχυδρομική Διεύθυνση
Λεωφ. Κυριάκου Μάτση ΙΑ, Τ. Θ. 22281 1519 Λευκωσία - Κύπρος
T: +357 22 458 100, Φ: +357 22 762 741, E: info@vassiliko.com
www.vassiliko.com

Material Safety Data Sheet

Health & Safety Information Portland Cements

According to Regulation (EC) No 1907/2006 (REACH)

Date: 14/01/2020

Version: 1.0 Effective from: 01/05/2020 Product: Portland Cement

1. SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

- CEM I Portland cements
- Sulphate Resisting Portland cement
- CEM II Portland Composite cements
- White Portland Limestone cement
- All strength classes 32.5, 42.5 and 52.5

1.2 Relevant identified uses of the substance or mixture and uses advised against

Cements are used for manufacturing hydraulic binders and building materials for building and construction work, such as ready-mixed concrete, mortars, renders, grouts, plasters as well as precast concrete in industrial installations and in the private sector, by consumers. Cements and cement containing mixtures are mixed with water and manufactured into the desirable building material. Similarly, the cover of dry products and the mixing of products with water occurs in a wet suspension (paste).

See section 16.2 for more information regarding use descriptors and categories.

Any uses not mentioned above, are advised against.

1.3 Details of the supplier of the safety data sheet

- Company Name: Vassiliko Cement Works Public Company Ltd.
- Address: 1A, Kyriakos Matsis Avenue, P.O. Box 22281, 1519 Nicosia, Cyprus
- Telephone number: +357 22 458 100
- Fax: +357 22 762 741
- Email: info@vassiliko.com

1.4 Emergency telephone number

- Emergency telephone number: +357 1401
- Hours of operation: 24 hours / 7 days
- Service is provided in the following languages: Greek

2. SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

2.1.1 According to Regulation (EC) No 1272/2008 (CLP)

Hazard class	Hazard category	Hazard statements
Skin irritation	2	H315: Causes skin irritation
Skin Sensitization	1B	H317: May cause an allergic skin reaction
Serious eye damage / eye irritation	1	H318: Causes serious eye damage
Specific target organ toxicity single exposure respiratory tract irritation, STOT SE	3	H335: May cause respiratory irritation

2.1.2 Additional information

The full list of the EU hazard statements is listed below in Section 16.

The mixing of cement and water produces a strong alkaline solution, which might cause skin and eye irritation.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP]

Hazard pictograms

Signal word: Danger

Hazard statements:
H315 Causes skin irritation
H317 May cause an allergic skin reaction
H318 Causes serious eye damage
H335 May cause respiratory irritation

Precautionary statements

- P280: Wear protective gloves/protective clothing/eye protection/face protection
- P305+P351+P338+P310: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
- P302+P352+P333+P313: IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.
- P261+P304+P340+P312: Avoid breathing dust. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
- **For cement bags used by consumers:**
- P102: Keep out of reach of children
- P501: Dispose of contents/container in accordance to national/European regulation.

Supplemental information
Skin contact with wet cement, fresh concrete or mortar may cause irritation, dermatitis or burns.

2.3 Other hazards

Cement/binding agent does not meet the criteria for PBT or vPvB in accordance with Annex XIII of the REACH Regulation (EC) No 1907/2006.

When cement reacts with water, for instance when making concrete or mortar, or when the cement becomes damp, a strong alkaline solution is produced. Due to the high alkalinity, wet cement may provoke skin and eye irritation.

Applied only for Cement bags:

Contains chromate reducing agent. As a result, the content of soluble chromium (VI) is less than 2 ppm. If the storage conditions are not appropriate or the storage period is exceeded, the effectiveness of the reducing agent can diminish, and the cement can become skin sensitizing.

3. SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixtures

Common cement types according to the EN 197-1 standard:

Constituent	**% [Concentration]**	**EC No.**	**CAS No.**	**Classification Regulation 1272/2008**	
				Hazard Class	**Hazard Statement**
Portland cement clinker	5-100	266-043-4	65997-15-1	Skin irritation 2	H315: Causes skin irritation
				Skin sensitisation 1B	H317: May cause an allergic skin reaction

				Serious eye damage/eye irritation 1	H318: Causes serious eye damage
				STOT SE 3 - Specific target organ toxicity-single exposure	H335: May cause respiratory irritation

4. SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

No personal protective equipment is needed for first aid responders. First aid workers should avoid contact with wet cement or wet cement containing mixtures.

Following contact with eyes

Do not rub eyes in order to avoid possible cornea damage as a result of mechanical stress.
Remove contact lenses if any. Incline head to injured eye, open the eyelid(s) widely and flush eye(s) immediately by thoroughly rinsing with plenty of clean water for at least 20 minutes to remove all particles. Avoid flushing particles into uninjured eye. If possible, use isotonic water (0.9% NaCl). Contact a specialist of occupational medicine or an eye specialist.

Following skin contact

For dry cement, remove and rinse abundantly with water. For wet cement, wash skin with plenty of water. Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them. Seek medical treatment in all cases of irritation or burns.

Following inhalation

Move the person to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops or if discomfort, coughing or other symptoms persist.

Following ingestion

Do not induce vomiting. If the person is conscious, wash out mouth with water and give plenty of water to drink. Get immediate medical attention or contact the anti-poison centre.

4.2. Most important symptoms and effects, both acute and delayed

Eyes: Eye contact with cement (dry or wet) may cause serious and potentially irreversible injuries.

Skin: Cement may have an irritating effect on moist skin (due to sweat or humidity) after prolonged contact or may cause contact dermatitis after repeated contact.
For more details see Reference (1).

Inhalation: Repeated inhalation of dust of common cements over a long period of time increases the risk of developing lung diseases.

Environment: Under normal use, common cement is not hazardous to the environment.

4.3. Indication of any immediate medical attention and special treatment needed
When contacting a physician, take this SDS with you.

5. SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Common cements are not flammable.

5.2 Special hazards arising from the substance or mixture
Cements are non-combustible and non-explosive and will not facilitate or sustain the combustion of other materials.

5.3 Advice for fire-fighters
Cement poses no fire-related hazards. No need for special protective equipment for fire fighters.

6. SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Wear protective equipment as described under Section 8 and follow the advice for safe handling and use given under Section 7.

6.1.2 For emergency responders

Emergency procedures are not required.
However, respiratory protection is needed in situations with high dust levels.

6.2 Environmental precautions

Cement should not penetrate the sewage water system, surface or groundwater.

6.3 Methods and material for containment and cleaning up

Collect the spillage in a dry state if possible.

Dry cement

Use cleanup methods such as vacuum clean-up or vacuum extraction (Industrial portable units, equipped with high efficiency air filters (EPA and HEPA filters, EN 1822-1:2009) or equivalent technique) which do not dust formation. Never use compressed air.
If dust is formed by a dry-cleaning method, personal protective equipment must be used. Avoid inhalation of cement dust and skin contact.
Alternatively, wipe-up the dust by mopping, wet brushing or by using water sprays or hoses (fine mist to avoid that the dust becomes airborne) and remove slurry.
If not possible, remove by slurrying with water (see wet cement).
When wet cleaning or vacuum cleaning is not possible and only dry cleaning with brushes can be done, ensure that workers wear the appropriate personal protective equipment and prevent dust from spreading.
Avoid inhalation of cement and contact with skin. Place spilled materials into a container. Solidify before disposal as described under Section 13.

Wet cement

Clean up wet cement and place in a container. Allow material to dry and solidify before disposal as described under Section 13.

6.4. Reference to other sections

See sections 8 and 13 for more details.

7. SECTION 7: Handling and storage

7.1 Precautions for safe handling

7.1.1 Protective measures

Follow the recommendations as given under Section 8.
To clean up dry cement, see Subsection 6.3.

Measures to prevent fire

Not applicable.

Measures to prevent aerosol and dust generation

Do not sweep. Use dry cleanup methods such as vacuum clean-up or vacuum extraction, which do not cause dust formation.
For more information, refer to the practice guidelines adopted under the Social Dialogue Agreement on Workers' Health Protection through the Good Handling and Use of Crystalline Silica and Products Containing it, by Employee and Employer European sectoral associations, including CEMBUREAU. These safe handling practices can be found via the following link:
https://www.nepsi.eu/sites/nepsi.eu/files/content/editor/good_practice_guide_-_english_original_additional_task_sheets_-251006_modified_16072012-.pdf

Measure to protect the environment

No particular measures.

7.1.2 Information on general occupational hygiene

Do not handle or store near food and beverages or smoking materials.
In dusty environment, wear dust mask and protective goggles.
Use protective gloves to avoid skin contact.

7.2 Conditions for safe storage, including any incompatibilities

Bulk cement should be stored in silos that are waterproof, dry (i.e. with internal condensation minimised), clean and protected from contamination.
To prevent engulfment or suffocation, do not enter a confined space, such as a silo, bin, bulk truck, or other storage container or vessel that stores or contains cement without taking the proper security measures. Cement can build-up or adhere to the walls of a confined space. The cement can release, collapse or fall unexpectedly.
Packed products should be stored in unopened bags clear of the ground in cool, dry conditions and protected from excessive draught in order to avoid degradation of quality. Bags should be stacked in a stable manner.
Do not use aluminium containers for the storage or transport of wet cement containing mixtures due to incompatibility of the materials.
For cements treated with a Cr (VI) reducing agent according to the regulations given in Section 15, the effectiveness of the reducing agent diminishes with time. Therefore, cement bags will contain information on the packaging date, the storage conditions and the storage period appropriate to maintaining the activity of the reducing agent and to

keeping the content of soluble chromium VI below 0.0002 % of the total dry weight of the cement ready for use, according to EN 196-10. The low effectiveness of the reducing agent would cause a skin sensitization upon skin contact.

7.3 Specific end use(s)
No additional information for the specific end uses (see section 1.2).

8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION
8.1 Control parameters

Substance	CAS	Long Term Exposure Limit (8hr Time Weighted Average (TWA) Reference Method)	Legal Reference
Portland Cement Clinker	65997-15-1	10 mg/m^3	

8.2 Exposure controls
General: During work avoid kneeling in fresh mortar or concrete wherever possible. If kneeling is necessary, then appropriate waterproof personal protective equipment must be worn.

Do not eat, drink or smoke when working with cement to avoid contact with skin or mouth.

Remove any contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them.

Immediately after working with cement or cement-containing materials, workers should wash thoroughly.

8.2.1 Individual protection measures such as personal protection equipment

General
Do not eat, drink or smoke when working. Wash hands and if necessary, shower before breaks and after work to remove adherent cement. Avoid contact with eyes and skin. After working with cement, workers should wash or shower and use skin care products. Clean contaminated clothing, footwear etc. thoroughly before re-use.

Eye/face protection

Wear approved glasses or safety goggles according to EN 166 when handling dry or wet cement to prevent contact with eyes.

Skin protection

Use waterproof wear, and alkali resistant protective gloves (e.g. nitrile soaked cotton gloves with CE marking) internally lined with cotton, boots, closed long-sleeved protective clothing as well as skin care products (e.g. barrier creams) to protect the skin from prolonged contact with wet cement. Particular care should be taken to ensure that wet cement does not enter the boots. For the gloves, respect the maximum wearing time to avoid skin problems.
In some circumstances, such as when laying concrete or screed, waterproof trousers or kneepads are necessary.

Respiratory protection

When a person is potentially exposed to dust levels above exposure limits, use appropriate respiratory protection. The type of respiratory protection should be adapted to the dust level and conform to the relevant EN standard, (e.g. EN 149, EN 140, EN 14387, EN 1827) or national standard.

8.2.2 Environmental exposure controls
Environmental exposure control for the emission of cement particles into air has to be in accordance with the available technology and regulations for the emission of general dust particles.
Air: Environmental exposure control for the emission of cement particles into air has to be in accordance with the available technology and regulations for the emission of general dust particles.

Water: Do not wash cement into sewage systems or into bodies of water, to avoid high pH. Above pH9 negative ecotoxicological impacts are possible.
Soil and terrestrial environment: No special emission control measures are necessary for the exposure to the terrestrial environment.

9. SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

This information applies to the whole mixture.
(a) Appearance: Dry cement is a finely ground solid inorganic material (grey or white powder).
(b) Odour: Odourless
(c) Odour threshold: No odour threshold, odourless
(d) pH: (T = 20°C in water, water-solid ratio 1:2): 11-13.5
(e) Melting point: > 1250 °C
(f) Initial boiling point and boiling range: Not applicable as under normal atmospheric conditions, melting point >1250°C
(g) Flash point: Not applicable as is not a liquid
(h) Evaporation rate: Not applicable as is not a liquid
(i) Flammability (solid, gas): Not applicable as is a solid which is noncombustible and does not cause or contribute to fire through friction
(j) Upper/lower flammability or explosive limits: Not applicable as is not a flammable gas
(k) Vapour pressure: Not applicable as melting point > 1250 °C
(l) Vapour density: Not applicable as melting point > 1250 °C
(m) Relative density: 2.75-3.20; Bulk density: 0.9-1.5 g/cm³
(n) Solubility(ies) in water (T = 20 °C): slight (0.1-1.5 g/l)
(o) Partition coefficient: n-octanol/water: Not applicable as is inorganic mixture
(p) Auto-ignition temperature: Not applicable (no pyrophoricity – no organo-metallic, organo-metalloid or organo-phosphine bindings or of their derivatives, and no other pyrophoric constituent in the composition)
(q) Decomposition temperature: Not applicable as no organic peroxide present
(r) Viscosity: Not applicable as not a liquid
(s) Explosive properties: Not applicable. Not explosive or pyrotechnic. Not in itself capable by chemical reaction of producing gas at such temperature and pressure and at such a speed as to cause damage to the surroundings. Not capable of a self-sustaining exothermic chemical reaction.
(t) Oxidising properties: Not applicable as does not cause or contribute to the combustion of other materials

9.2 Other information
Not applicable.

10. SECTION 10: Stability and reactivity

10.1 Reactivity
Cement is hydraulic material. When mixed with water, cements will harden into a stable mass that is not reactive in normal environments.

10.2. Chemical stability
Cements are stable if they are properly stored (see Section 7) and compatible with most other building materials. They should be kept dry. Contact with incompatible materials should be avoided. Cement dissolves in hydrofluoric acid to produce corrosive silicon tetrafluoride gas. Cement reacts with water to form silicates and calcium hydroxide. Silicates in cement react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, managanese trifluoride, and oxygen difluoride.

10.3 Possibility of hazardous reactions
Cements do not cause hazardous reactions.

10.4 Conditions to avoid
Humidity conditions during storage may cause lump formation and loss of product quality.

10.5 Incompatible materials
Acids, ammonium salts, aluminium or other non-noble metals. Uncontrolled use of aluminium powder in wet cement should be avoided as hydrogen is produced.

10.6. Hazardous decomposition products
Cements will not decompose into any hazardous products.

11. SECTION 11: Toxicological information

11.1 Information on toxicological effects

Hazard class	Cat	Effect	Reference
Acute toxicity – dermal	-	Limit test, 24 hours contact, 2,000 mg/kg body weight – no lethality. Based on available data, the classification criteria are not met.	(2)
Acute toxicity- inhalation	-	No acute toxicity by inhalation observed. Based on available data, the classification criteria are not met.	(9)
Acute toxicity - oral	-	No indication of oral toxicity from studies with cement kiln dust. Based on available data, the classification criteria are not met.	Literature survey

Skin corrosion/ irritation	2	Cement in contact with wet skin has an irritating effect causing inflammatory skin reactions. Prolonged contact in combination with abrasion may cause severe skin damages.	(2) Human experience
Serious eye damage/irritation	1	Portland cement clinker caused a mixed picture of corneal effects and the calculated irritation index was 128. Common cements contain varying quantities of Portland cement clinker, fly ash, blast furnace slag, gypsum, natural pozzolans, burnt shale, silica fume and limestone. Direct contact with cement may cause corneal damage by mechanical stress, immediate or delayed irritation or inflammation. Direct contact by larger amounts of dry cement or splashes of wet cement may cause effects ranging from moderate eye irritation (e.g. conjunctivitis or blepharitis) to chemical burns and blindness.	(10), (11)
Skin sensitisation	1B	Some individuals may develop eczema upon exposure to wet cement dust, caused either by the high pH which induces irritant contact dermatitis after prolonged contact, or by an immunological reaction to soluble Cr (VI) which elicits allergic contact dermatitis. The response may appear in a variety of forms ranging from a mild rash to severe dermatitis and is a combination of the two above mentioned mechanisms. If the cement contains a soluble Cr (VI) reducing agent and as long as the mentioned period of effectiveness of the chromate reduction is not exceeded, a sensitising effect is not expected [Reference (3)].	(3), (4), (17)
Respiratory sensitisation	-	There is no indication of sensitisation of the respiratory system. Based on available data, the classification criteria are not met.	(1)
Germ cell mutagenicity	-	No indication. Based on available data, the classification criteria are not met.	(12), (13)
Carcinogenicity	-	No causal association has been established between Portland cement exposure and cancer. The epidemiological literature does not support the designation of Portland cement as a suspected human carcinogen. Portland cement is not	(1) (14)

		classifiable as a human carcinogen (According to ACGIH A4). Based on available data, the classification criteria are not met.	
Reproductive toxicity	-	Based on available data, the classification criteria are not met.	No evidence from human experience
STOT-single exposure	3	Cement dust may irritate the throat and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposures in excess of occupational exposure limits. Overall, the pattern of evidence clearly indicates that occupational exposure to cement dust has produced deficits in respiratory function. However, evidence available at the present time is insufficient to establish with any confidence the dose-response relationship for these effects.	(1)
STOT-repeated exposure	-	There is an indication of COPD. The effects are acute and due to high exposures. No chronic effects or effects at low concentration have been observed. Based on available data, the classification criteria are not met.	(15)
Aspiration hazard	-	Not applicable as cements are not used as an aerosol.	

Apart from skin sensitisation, Portland cement clinker and common cements have the same toxicological and eco-toxicological properties.

Medical conditions aggravated by exposure

Inhaling cement dust may aggravate existing respiratory system disease(s) and/or medical conditions such as emphysema or asthma and/or existing skin and/or eye conditions.

12. SECTION 12: Ecological information

12.1 Toxicity

The product is not hazardous to the environment. Ecotoxicological tests with Portland cement on Daphnia magna [Reference (5)] and Selenastrum coli [Reference (6)] have shown little toxicological impact. Therefore LC50 and EC50 values could not be determined [Reference (7)]. There is no indication of sediment phase toxicity [Reference (8)]. The addition of large amounts of cement to water may however cause a rise in pH and may therefore be toxic to aquatic life under certain circumstances.

12.2 Persistence and degradability

Not relevant. After hardening, cement presents no toxicity risks.

12.3 Bioaccumulative potential

Not relevant. After hardening, cement presents no toxicity risks.

12.4 Mobility in soil

Not relevant. After hardening, cement presents no toxicity risks.

12.5 Results of PBT and vPvB assessment

Not relevant. After hardening, cement presents no toxicity risks.

12.6 Other adverse effects

Not relevant.

13. SECTION 13: Disposal considerations

13.1 Waste treatment methods

Do not dispose of into sewage systems or surface waters.

Product - cement that has exceeded its shelf life

EWC entry: 10 13 99 (wastes not otherwise specified). (and when demonstrated that it contains more than 0.0002% soluble Cr (VI): shall not be used/sold other than for use in controlled closed and totally automated processes or should be recycled or disposed of according to local legislation or treated again with a reducing agent.

Product - unused residue or dry spillage

EWC entry: 10 13 06 (Other particulates and dust). Pick up dry unused residue or dry spillage as is. Mark the containers. Possibly reuse depending upon shelf life

considerations and the requirement to avoid dust exposure. In case of disposal, harden with water and dispose according to “Product – after addition of water, hardened”.

Product – slurries

Allow to harden, avoid entry in sewage and drainage systems or into bodies of water (e.g. streams) and dispose of as explained below under “Product - after addition of water, hardened”.

Product - after addition of water, hardened

Dispose of according to the local legislation. Avoid entry into the sewage water system. Dispose of the hardened product as concrete waste.

EWC entries: 10 13 14 (waste from manufacturing of cement – waste concrete or concrete sludge) or 17 01 01 (construction and demolition wastes - concrete).

Packaging

Empty packaging completely and recycle. Otherwise, dispose of the completely emptied packaging according to waste code EWC:

EWC entry: 15 01 01 (waste paper and cardboard packaging).

14. SECTION 14: TRANSPORT INFORMATION

Cement is not covered by the international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID), therefore no classification is required.
No special precautions are needed apart from those mentioned under Section 8.

14.1 UN number
Not applicable

14.2 UN proper shipping name
Not applicable

14.3 Transport hazard class(es)
Not applicable

14.4 Packing group
Not applicable

14.5 Environmental hazards
Not applicable

14.6 Special precautions for user

Not applicable

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable

15. SECTION 15: REGULATORY INFORMATION
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulatory information
Cement is a mixture according to REACH and is not subject to registration. Cement clinker is exempt from registration (Art 2.7 (b) and Annex V.10 of REACH).
The marketing and use of cement is subject to a restriction on the content of soluble Cr (VI) (REACH Annex XVII point 47 Chromium VI compounds):
1. Cement and cement-containing mixtures shall not be placed on the market, or used, if they contain, when hydrated, more than 2 mg/kg (0,0002 %) soluble chromium VI of the total dry weight of the cement.
2. If reducing agents are used, then without prejudice to the application of other Community provisions on the classification, packaging and labelling of substances and mixtures, suppliers

shall ensure before the placing on the market that the packaging of cement or cement containing mixtures is visibly, legibly and indelibly marked with information on the packing date, as well as on the storage conditions and the storage period appropriate to maintaining the activity of the reducing agent and to keeping the content of soluble chromium VI below the limit indicated in paragraph 1.
3. By way of derogation, paragraphs 1 and 2 shall not apply to the placing on the market for, and use in, controlled closed and totally automated processes in which cement and cement-containing mixtures are handled solely by machines and in which there is no possibility of contact with the skin.
4.The standard, which has been adopted by the European Committee For Standardization (CEN) for the determination of the content of water-soluble Chromium (VI) of cement and cement-containing mixtures, has to be applied as the procedure to provide evidence of compliance with number 1.

15.2 Chemical Safety Assessment
No chemical safety assessment has been carried out for this mixture by the supplier.

16. SECTION 16: OTHER INFORMATION

16.1 Indication of changes

This MSDS 1.0 'Material Safety Data Sheet – Health & Safety Information Portland Cements' which was published in May 2020.
It has been reviewed and rewritten in order to meet the changes in legislation and complies with Regulation (EC) No 1907/2006 (REACH) and its amendment Regulation № 453/2010.

16.2 Identified uses and use descriptors and categories

The table below gives an overview of relevant identified uses of cement or cement containing hydraulic binders. All the uses have been grouped in these identified uses because of the specific conditions of exposure for human health and environment. For each specific use, a set of risk management measures or controls has been derived (see section 8) which need to be put in place by the user of cement or cement containing hydraulic binders to bring the exposure to an acceptable level.

PROC	**Identified Uses - Use Description**	**Manufacture/ Formulation of building and construction materials**	**Professional/ Industrial use of**
2	Use in closed, continuous process with occasional controlled exposure, e.g. industrial or professional manufacture of hydraulic binders.	**X**	**X**
3	Use in closed batch process, eg industrial or professional manufacture of ready-mix concrete	**X**	**X**
5	Mixing or blending in batch process for formulation of mixtures and articles, eg industrial or professional manufacture of pre-cast concrete	**X**	**X**

7	Industrial spraying, eg industrial use of wet suspensions of hydraulic binders by spraying		**X**
8a	Transfer of substance or mixture from/to vessels/large containers at non-dedicated facilities, eg use of cement in bags to prepare mortar		**X**
8b	Transfer of substance or mixture from/to vessels/large containers a dedicated facilities, eg filling of silos, trucks or barges at cement plants	**X**	**X**
9	Transfer of substance or mixture into small containers, eg filling of cement bags in cement plants	**X**	**X**
10	Roller application or brushing, eg products to improve adherence between building surfaces and finishing products		
11	Non-Industrial spraying, eg professional use of wet suspensions of hydraulic binders by spraying		**X**
13	Treatment of articles by dipping and pouring, eg covering of construction products with a layer to improve the performance of the product		**X**
14	Production of mixtures or articles by tabletting,	**X**	**X**

	compression extrusion, pelletisation, eg production of floor tiling		
19	Hand-mixing with intimate contact and only PPE available, eg mixture of wet hydraulic binder on a construction site		**X**
22	Potentially closed processing operations with minerals/metals at elevated temperature in industrial setting, eg production of bricks		**X**
26	Handling of solid inorganic substances at ambient temperature, eg mixture of wet hydraulic binders	**X**	**X**

16.3 Abbreviations and acronyms

ACGIH American Conference of Industrial Hygienists
ADR/RID European Agreements on the transport of Dangerous goods by Road/Railway
APF Assigned protection factor
CAS Chemical Abstracts Service
CLP Classification, labelling and packaging (Regulation (EC) No 1272/2008)
COPD Chronic Obstructive Pulmonary Disease
DNEL Derived no-effect level
EC50 Half maximal effective concentration
ECHA European Chemicals Agency
EINECS European INventory of Existing Commercial chemical Substances
EPA Type of high efficiency air filter
ES Exposure scenario
EWC European Waste Catalogue
FF P Filtering facepiece against particles (disposable)
FM P Filtering mask against particles with filter cartridge
GefStoffV Gefahrstoffverordnung
HEPA Type of high efficiency air filter
H&S Health and Safety
IATA International Air Transport Association
IMDG International agreement on the Maritime transport of Dangerous GoodsLC50 Median lethal dose

MEASE Metals estimation and assessment of substance exposure, EBRC Consulting GmbH for Eurometaux, http://www.ebrc.de/ebrc/ebrc-mease.php
MS Member State
OELV Occupational exposure limit value
PBT Persistent, bio-accumulative and toxic
PNEC Predicted no-effect concentration
PROC Process category
RE Repeated exposure
REACH Registration, Evaluation and Authorisation of Chemicals
RPE Respiratory protective equipment
SCOEL Scientific Committee on Occupational Exposure Limit Values
SDS Safety Data Sheet
SE Single exposure
STP Sewage treatment plant
STOT Specific Target Organ Toxicity
TLV-TWA Threshold Limit Value-Time-Weighted Average
TRGS Technische Regeln für Gefahrstoffe
VLE-MP Exposure limit value-weighted average in mg by cubic meter of air
vPvB Very persistent, very bio-accumulative
w/w Weight by weight
WWTP Waste water treatment plant

16.4 Relevant H-Statements
H315 Causes skin irritation
H317 May cause an allergic skin reaction
H318 Causes serious eye damage
H335 May cause respiratory irritation

16.5 Key literature references and sources of data

(1) Portland Cement Dust - Hazard assessment document EH75/7, UK Health and Safety Executive, 2006.
Available from: http://www.hse.gov.uk/pubns/web/portlandcement.pdf.
(2) Observations on the effects of skin irritation caused by cement, Kietzman et al, Dermatosen, 47, 5, 184-189 (1999).
(3) European Commission's Scientific Committee on Toxicology, Ecotoxicology and the Environment
(SCTEE) opinion of the risks to health from Cr (VI) in cement (European Commission, 2002).
http://ec.europa.eu/health/archive/ph_risk/committees/sct/documents/out158_en.pdf.
(4) Epidemiological assessment of the occurrence of allergic dermatitis in workers in the construction industry related to the content of Cr (VI) in cement, NIOH, Page 11, 2003.
(5) U.S. EPA, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 3rd ed. EPA/600/7-91/002, Environmental

Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1994a) and 4th ed. EPA-821-R-02-013, US EPA, office of water, Washington
D.C. (2002).
(6) U.S. EPA, Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 4th ed. EPA/600/4-90/027F, Environmental Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1993) and 5th ed. EPA-821-R-02-012, US EPA, office of water, Washington D.C. (2002).
(7) Environmental Impact of Construction and Repair Materials on Surface and Ground Waters. Summary of Methodology, Laboratory Results, and Model Development. NCHRP report 448, National Academy Press, Washington, D.C., 2001.
(8) Final report Sediment Phase Toxicity Test Results with Corophium volutator for Portland clinker prepared for Norcem A.S. by AnalyCen Ecotox AS, 2007.
(9) TNO report V8801/02, An acute (4-hour) inhalation toxicity study with Portland Cement Clinker CLP/GHS 03-2010-fine in rats, August 2010.
(10) TNO report V8815/09, Evaluation of eye irritation potential of cement clinker G in vitro using the isolated chicken eye test, April 2010.
(11) TNO report V8815/10, Evaluation of eye irritation potential of cement clinker W in vitro using the isolated chicken eye test, April 2010.
(12) Investigation of the cytotoxic and proinflammatory effects of cement dusts in rat alveolar macrophages, Van Berlo et al, Chem. Res. Toxicol., 2009 Sept; 22(9):1548-58.
(13) Cytotoxicity and genotoxicity of cement dusts in A549 human epithelial lung cells in vitro; Gminski et al, Abstract DGPT conference Mainz, 2008.
(14) Comments on a recommendation from the American Conference of governmental industrial Hygienists to change the threshold limit value for Portland cement, Patrick A. Hessel and John F. Gamble, EpiLung Consulting, June 2008.
(15) Prospective monitoring of exposure and lung function among cement workers, Interim report of the study after the data collection of Phase I-II 2006-2010, Hilde Notø, Helge Kjuus, Marit Skogstad and Karl-
Christian Nordby, National Institute of Occupational Health, Oslo, Norway, March 2010.
(16) MEASE, Metals estimation and assessment of substance exposure, EBRC Consulting GmbH for
Eurometaux, http://www.ebrc.de/industrial-chemicals-reach/projects-and-references/mease.php.
(17) Occurrence of allergic contact dermatitis caused by chromium in cement. A review of epidemiological investigations, Kåre Lenvik, Helge Kjuus, NIOH, Oslo, December 2011.

16.6 Training advice

In addition to health, safety and environmental training programs for their workers, companies must ensure that workers read, understand and apply the requirements of this SDS.

16.7 Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]

Classification according to Regulation (EC) No. 1272/2008	Classification procedure
Skin Irrit. 2, H315	On basis of test data
Eye Dam. 1, H318	On basis of test data
Skin sens. 1B, H317	Human experience
STOT SE. 3, H335	Human experience

16.8 Disclaimer

The information on this data sheet reflects the currently available knowledge and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product, including the use of the product in combination with any other product or any other process, is the responsibility of the user.
It is implicit that the user is responsible for determining appropriate safety measures and for applying the legislation covering his/her own activities.

End of Safety Data Sheet